APPENDIX B

# COMMAND POST OPERATIONS

*Echeloned command and control facilities control battalions with varying levels of staff participation at each echelon. The battalion command group operates forward and consists of the commander and those selected to go forward to assist in controlling maneuver and fires during the battle. The command group normally includes the FSO and ALO but there is no requirement for these people to collocate. For example, the commander may be in one part of the battalion sector while the S3 is in a separate part of the sector. The commander determines the composition, nature, and tasks of the command group based on METT-TC analysis. As a minimum, the command group--*

- *Synchronizes combat assets in support of close operations.*
- *Controls close operations.*
- *Maintains the current operational situation.*
- *Provides close situation information to the main CP.*

*The commander and S3 monitor the battle, develop the situation, analyze courses of action, and control the companies.*

## Section I. COMMAND AND CONTROL FACILITIES

Battalion command and control facilities consist of the vehicles and locations from which the battalion commander, assisted by his staff, directs the battle and sustains the force. These facilities include the main command post, the tactical command post, and the combat trains command post.

### B-1. COMMAND POST SURVIVABILITY

CP survivability depends mostly on concealment and mobility. The best way to protect a CP is to prevent the enemy from detecting it. Good camouflage and proper noise, light, and signal discipline enhance the security provided by a good location.

a. **Location.** The best place for CPs is in built-up areas. When necessary, a CP not in a built-up area should be located on a reverse slope with cover and concealment. Avoid key terrain features such as hilltops and crossroads. Locate CPs on ground that is trafficable, even in poor weather. Other considerations for positioning CPs include--

- Ensuring line-of-sight communications with higher, lower, and adjacent units.
- Avoiding redundancy of communications.
- Masking signals from the enemy.
- Using terrain for passive security (cover and concealment).
- Collocating with tactical units for mutual support and local security.
- Avoiding possible enemy TRPs for enemy artillery and CAS.
- Locating the CP near an existing road network out of sight from possible enemy observation.

b. **Access.** CPs should be centered in the area of operations whenever possible. They should be near, but not next to, a high-speed avenue of approach with no more than one or two routes leading into the CP. These routes should provide cover, concealment, and

access to other routes of communication. When possible, a helicopter landing zone should be nearby.

c. **Size**. The area selected must be large enough to accommodate all CP elements. This includes liaison teams from other units; communications support; and eating, sleeping, latrine, and maintenance areas. Sufficient area must be available for positioning security and vehicle dismount points and parking.

d. **Shelter.** Dryness and light are vital when working with maps and producing orders and overlays. CPs should be sheltered from weather conditions and should have lights for night work (exercising proper light discipline.) Buildings are the best choice but if none are available, CPs operate from their organic vehicles or tents.

e. **Operational Security.** OPSEC considerations for positioning CPs include the following:

(1) There should be no signs advertising CP locations. Disperse CP vehicles and thoroughly camouflage all vehicles and equipment. Maintain noise and light discipline.

(2) A security force is required, and it must have communications with the CPs. Establish security force positions as in any defensive position, with a 360-degree perimeter and far enough out to prevent enemy fires on the CPs. The security force should have antitank weapons to protect CPs from enemy armor. Establish a reserve reaction force and rehearse the execution of the perimeter defense.

(3) Battalions normally rely on off-duty personnel for CP security. The command group may assist in securing a CP if collocated. Units may rarely be able to employ combat elements to help secure a CP.

(4) In general, positioning C2 assets off major enemy mounted avenues of approach reduces the enemy threat. Position CPs so the enemy bypasses them.

(5) An OP should secure any remote antennas located outside the perimeter.

(6) All subordinate units and elements of the CP must receive near and far recognition signals. The CP uses these signals, challenges, and passwords to control access into its perimeter.

(7) In case of artillery or air attack, a designated rally point and an alternate CP should be at least 500 to 1,000 meters away.

## B-2. DISPLACEMENT

CPs may displace as a whole or, more often, by echelon. Displacement as a whole is normally reserved for short movements with communications maintained by alternate means and minimal risk of degrading CP operations.

a. A portion of the CP, called a jump CP, moves to the new location, sets up operations, and takes over operational control of the battle from the main CP. The remaining portion of the CP then moves to rejoin the jump CP. The jump CP consists of the necessary vehicles, personnel, and equipment to assume CP operations while the remainder moves. At battalion level, the jump CP normally comes from within the main CP.

b. The XO or S3 selects a general location for the jump CP site. The jump CP can be accompanied by a quartering party, which may consist of a security element and personnel and equipment for quartering the remainder of the CP. The signal officer, who is usually part of the quartering party, ensures communications on all nets are possible

from the new site. When the jump CP becomes operational, it also becomes the net control station for the unit. The remainder of the CP then moves to rejoin the jump CP.

c. Another technique is to hand off control to the command group and move the main CP as a whole. The command group can also split, with the commander moving with the main effort and the S3 moving with the supporting effort.

## Section II. COMMAND POST OPERATIONS

Each CP must be organized to permit continuous operations and the rapid execution of the command and control process. SOPs for each CP should be established, known to all, and rehearsed. These SOPs should include--

- The organization and setup of each CP.
- Plans for teardown and displacement of the CP.
- Eating and sleeping plans during CP operations.
- CP shift manning, shift changes, and operation guidelines.
- Physical security plans for the CP.
- Priorities of work during CP operations.
- Loading plans and checklists.
- Orders production.
- Techniques for monitoring enemy and friendly situations.
- Posting of CP map boards.
- Maintenance of CP journals and logs.

### B-3. COMMUNICATIONS

Command posts monitor communications nets, receive reports, and process information to satisfy commander needs or CCIR. This information is maintained on maps, charts, and logs. Each staff section maintains daily journals to log messages and radio traffic.

### B-4. MAPS

CPs maintain information as easily understood map graphics and charts. Status charts can be combined with situation maps to give commanders friendly and enemy situation snapshots for the planning process. This information must be updated continuously.

a. For simplicity, all map boards should be the same size and scale, and overlay mounting holes should be standard on all map boards. This allows easy transfer of overlays from one board to another.

b. The following procedures for posting friendly and enemy information on the map will aid commanders and staff officers in following the flow of battle.

(1) All graphics should be posted on an overlay. Friendly and enemy unit symbols should be displayed on clear acetate placed on the operations overlay. These symbols can be marked with regular stick cellophane tape or with marking pen.

(2) The exact unit location is indicated by the center of mass of the symbol.

(3) Units normally keep track of subordinate units two levels down. This may be difficult during the conduct of combat operations. It may be necessary to track locations of immediate subordinate units instead.

## B-5. THE BATTLE CAPTAIN

The CP staff focuses on collecting the critical information the commander needs to fight the battle. Information flow is a constant problem in most CPs, especially since everyone in the CP must maintain a common operating picture. The battle captain's role is to plan, coordinate, supervise, and maintain communication flow throughout the CP to ensure the successful accomplishment of all assigned missions. The CP battle captain assists the commander, XO, and S3 by being the focal point in the CP for communications, coordination, and information management. The battle captain is also the CP officer in charge (OIC) in the absence of the commander, XO, and S3.

a. The battle captain has the overall responsibility for the smooth functioning of the CP facility and its staff elements. This range of responsibility includes--

- Maintaining continuous operations of the CP while static and mobile.
- Battle-tracking the current situation.
- Ensuring communications are maintained with and between all stations and that all messages and reports are routed and logged per SOP.
- Assisting the XO with coordination of CP staff functions to ensure a smooth and continuous information flow between the staff sections of the CP.
- Processing essential data from the incoming flow of information to ensure all tactical and logistical information is gathered and provided to the CP staff, S3, and XO on a regular basis.
- Providing security for the CP, including its physical security and maintenance of noise and light discipline.
- Ensuring mobility of the CP, including configuration, equipment, and training, to facilitate rapid movement.
- Conducting CP battle drills and enforcing CP SOP.

b. The battle captain ensures all staff elements in the CP understand their actions in accordance with SOP and provides coordination for message flow, staff briefings, updates to CP charts, and other coordinated staff actions. As a focal point in the CP, the battle captain processes essential information from incoming data, assesses it, ensures dissemination, and makes recommendations to the commander, XO, and S3.

c. Information management in the CP can include processing journals, message forms, reports, FRAGOs, and requests for information. The battle captain ensures the consistency, accuracy, and timeliness of information leaving the CP, including preparing and dispatching FRAGOs and warning orders. In addition, he monitors and enforces the updating of charts and status boards necessary for battle management and ensures this posted information is timely, accurate, and accessible.

d. To function effectively, the battle captain must have a working knowledge of all elements in the CP, understand unit SOP, and ensure the CP staff uses them. He must know the current plan and task organization of the unit and understand the commander's intent. In addition, the battle captain must understand the limits of his decision-making and action authority.

e. The battle captain must be integrated into the decision-making process and know why certain key decisions were made. He must know the technical aspects of the battle plan and understand the time-space relationship to execute any specific support task. He must understand and enforce the battle rhythm--the standard events or actions that happen during a normal 24-hour period--and ensure the CP staff is effective throughout the

period. Battle captains use their judgment to adjust CP activities and events to accomplish the CP mission across different shifts, varying tactical circumstances, and changes in CP location.

## Section III. COMMUNICATION

Communication is the means through which command and control is exercised. Soldiers throughout the organization must know the chain of command and succession of command. There must be open lines of communications up, down, and laterally. The commander should--

- Provide for redundancy in communications means by having backup at key locations.
- Make sure subordinates know what to do during interruptions in communications. Ensure SOPs specify immediate actions in case of jamming, including prearranged frequencies to switch to and code words.
- Avoid overloading the communications systems. Use them only when necessary. Practice disciplined communications procedures by eliminating nonessential conversations.

### B-6. RESPONSIBILITIES

The order of responsibilities for communications is--

- Senior to subordinate.
- Supporting to supported.
- Reinforcing to reinforced.
- Passing to passed (for forward passage of lines).
- Passed to passing (for rearward passage of lines).
- Left to right.
- Rearward to forward.

All units take immediate action to restore lost communications. These responsibilities apply to establishing liaison between headquarters.

### B-7. MEANS OF COMMUNICATION

Wire is the primary means of communication when the situation permits. Other means include couriers, sound and visual signals, telephones, and radios.

a. **Wire.** Wire is normally used for internal communications in the CP area, assembly areas, and defensive positions. Wire takes more time to plan, install, and recover but provides reliable communication if time and the tactical situation permit its installation.

b. **Courier.** Couriers are used between C2 facilities and between higher and lower headquarters. Couriers are slower and more vulnerable than other means of communications but can be used when other means cannot be used. When authorized, motorcycle messengers can be used between the CP, trains, higher headquarters, and companies. Messengers should be instructed on destruction procedures to prevent enemy capture of messages.

c. **Sound and Visual.** Sound and visual signals may be included in unit SOPs. Sound signals include metal-on-metal, vehicle horns, whistles, and bells. Visual signals include lights, flags, arm-and-hand signals, and pyrotechnics.

d. **Telephone Lines.** Commercial telephone lines can be used with permission of higher headquarters. If used, it should be assumed the enemy can monitor all calls made using commercial telephone lines.

e. **Radio.** Radio should not be the primary means of communication until after the unit makes contact.

### B-8. COMMUNICATIONS SECURITY

The commander must understand the capabilities, limitations, and vulnerabilities of the CP communications systems and ensure the employment of effective communications control and security as an essential function of command post operations.

a. **Radio Transmissions.** Radio transmissions should be brief to reduce the EW signature. Using secure operational and numerical codes reduces the chance of enemy detection. Use low-power transmissions and terrain to mask signals from enemy direction-finding equipment. Use couriers or wire for lengthy messages. Units must practice using SOP and operational terms.

b. **Physical Security**. Physical security protects cryptographic systems and classified documents from capture or loss. Before vacating an area, inspect it for any materials that could provide friendly information to the enemy. Patrol wire lines to prevent enemy tapping. When cryptographic equipment is lost or captured, report the facts promptly to the next higher command. The unit SOP must contain instructions for destruction of equipment and classified documents to prevent their capture or use by the enemy.

## Section IV. COMMUNICATION SYSTEMS

Communications is the means by which the commander projects his command and control across the width and depth of the battlefield. The Army command and control system encompasses all Army communications and consists of the following subordinate systems: Army global command and control system (AGCCS) at the operational/theater level and the ABCS at echelons corps and below (ECB). Communications currently available to the battalion fall under one of the subsets of the ABCS:

- Combat net radio.
- Army common user system (ACUS).
- Army data distribution system (ADDS).

### B-9. COMBAT NET RADIO

The primary means of communication for the maneuver battalion is CNR. This family of push-to-talk radios includes SINCGARS, improved high frequency radio (IHFR), and single-channel TACSAT radios.

a. **SINCGARS.** SINCGARS is the primary means of communications available to the battalion. Although primarily a voice transmitter, SINCGARS can also be used to pass limited data transmissions. The planning range for this system is a maximum of ten kilometers dismounted and 35 kilometers mounted. The range can be extended through use of retransmission equipment or antennas such as the OE-254. SINCGARS, through CNR, can provide access into the ACUS via the KY-90 combat net radio interface (CNRI). The KY-90 is installed on the battlefield by the signal battalion. The SINCGARS radio nets typically installed by a battalion are command and control,

intelligence, and administrative/logistical. The battalion also enters and monitors nets established by its higher headquarters. When establishing SINCGARS nets for CP operations, remoting the antennas limits the enemy's ability to direction-find the CP location.

b. **Improved High Frequency Radio.** Using IHFR provides a versatile capability for short- and long-range communications and provides longer range than SINCGARS. HF is the only tactical communications asset that may achieve long-range communications independent of terrestrial or satellite relays. HF is also useful where LOS cannot be achieved. HF communications may be either voice or secure data, but the distribution of this equipment is limited to one or two sets per battalion. Radio remains the most detectable means of electronic communications and is subject to both intentional and unintentional electronic interference.

c. **Tactical Satellite.** The use of satellite communications gives the commander the greatest range. The TACSAT radio transmits in the UHF/VHF range, requiring the antenna to have LOS with the satellite. Satellite access time must be requested in advance of use.

## B-10. ARMY COMMON USER SYSTEM

Mobile subscriber equipment (MSE) provides the ACUS at ECB. Signal battalions install the backbone node centers (NCs) while small extension nodes (SENs) and radio access units (RAUs) provide access for the maneuver unit.

a. **Mobile Subscriber Radio Telephone.** The MSRT is the primary MSE equipment available to the battalion. It consists of a VHF radio and a digital secure voice telephone (DSVT). The MSRT automatically selects random channels for each call and chooses the lowest effective radio frequency transmit level. The MSRT can be installed in a vehicular configuration, remote from the vehicle, or in a stand-alone mode when used with an appropriate power supply. The MSRT must be within 15 kilometers of a RAU site to communicate. Distribution in a battalion is usually limited to two or three MSRTs.

b. **Digital Voice Nonsecure Telephone (DVNT).** The DVNT is a four-wire nonsecure telephone terminal that requires collocation with a SEN to connect to the MSE network. The SEN provides connection to the tactical packet network (TPN) for the battalion computers. Using the TPN allows the battalion to connect commercial computers or Army systems (warlord or maneuver control system) to the MSE network. Typically, battalion operations do not include task organization of a SEN for battalion use. The field trains command post (FTCP) located in the BSA is usually the first SEN access available to a battalion.

## B-11. THE DIGITAL BATTLEFILED

As the Army enters the 21st century, digital communications upgrades will change the nature of operations at the battalion level. The information battlefield will see rapid dissemination of products up and down the chain of command and to adjacent units. The Army will share a common picture of the battlespace regardless of task organization. Emerging doctrine has redefined the ABCS as the integration of six functional area control systems that provide situational information and decision support.

a. The principal automation components of the ABCS at the battalion level are--

- Maneuver control system-light.
- Advanced field artillery tactical data system.
- Forward area air defense command, control, computers, and intelligence.
- All-source analysis system.
- Combat service support control system.
- Force XXI battle command brigade and below.

b. The principal communication components of the ABCS are--

- EPLRS.
- NTDR.
- CNR SINCGARS system improvement plan (SIP).
- MSE TPN.

## B-12. TACTICAL INTERNET

The TI is a collection of interconnected tactical radios and computer hardware and software providing seamless C2 INFOSYS data exchange between maneuver, CSS, and C2 INFOSYS platforms. The TI's primary function is to provide a more responsive information exchange capability to support battle command at brigade level and below.

a. The TI consists of FBCB2 computers, the EPLRS very high speed integrated circuits (VHSIC), the SINCGARS SIP, and other supporting communications equipment. It is an automated, router-based communications network using commercial Internet standard protocols to move data vertically and horizontally through the SBCT area and to higher-level echelons using the MSE TPN. Automated network management tools in the maneuver battalion provide TI planning, monitoring, and reconfiguring capabilities.

b. The TI is divided into two sub-areas: autonomous systems and routing areas. Typically, a battalion represents one autonomous system. An autonomous system is a collection of networks, under a common administration, that shares a common routing strategy. An autonomous system can consist of one or many networks, and each network may or may not have an internal structure. A routing area is a network in an autonomous system. Routing areas and the autonomous system to which they belong share the same routing strategy.

## B-13. FORCE XXI BATTLE COMMAND BRIGADE AND BELOW

The FBCB2 hardware is a mix of commercial, ruggedized, and militarized computers installed in vehicles at brigade level and below or issued to individuals as dismounted soldier system units (DSSUs). When available, the FBCB2 can be connected to the GPS and other embedded platform interfaces. FBCB2 is common to all aspects of the digitized battlefield; selected individuals in all platoons and companies have one. They are in most C2 INFOSYS platforms and CPs. The FBCB2 system has five configurations or versions:

- FBCB2, Version 1 (V1): Commercial off-the-shelf notebook computer.
- FBCB2, V2: Ruggedized computer.
- FBCB2, V3: Militarized computer.
- DSSU: Militarized computer.
- Position Navigation Device: Militarized computer.

a. FBCB2 uses the variable message format (VMF) to send and receive messages horizontally and vertically on the battlefield, irrespective of task organization. VMF improves current configurations in which the BOS automation systems do not

communicate to each other. Digitization provides communication and processing capabilities to the Warfighter, which yields significant advantages in two key areas.

(1) ***Situational Understanding.*** Situational understanding is a state of understanding gained from knowledge based on accurate and real-time information of friendly, enemy, neutral, and noncombatant locations. It consists of a common, relevant picture of the battlefield scaled to specific levels of interest and needs.

(2) ***Command and Control.*** C2 is direction by a commander over assigned forces in accomplishing a mission. A commander employs C2 functions as he plans, directs, and controls forces and operations to accomplish a mission.

b. FBCB2 provides each echelon with the COP two echelons up and down and one adjacent unit left and right. FBCB2 significantly improves the effectiveness of the force.

(1) FBCB2 provides up-to-date combat situation information based on echelon and location of--

- Friendly and enemy positions.
- Air and ground unit positions.
- Maps, terrain, and elevation.

(2) FBCB2 provides rapid generation and dissemination of messages and acknowledgments of--

- Orders and requests.
- Fires and alerts.
- Reports.
- Overlays on the situation picture.
- Semiautomatic exchange of selected mission-critical data between the FBCB2 and the ABCS component systems.

c. For each task reorganization, FBCB2 hosts affected by the task reorganization must receive new initialization data. Transfer of the modified initialization data to the ultimate users occurs through signal channels.

## B-14. ENHANCED POSITION LOCATION REPORTING SYSTEM WITH VERY HIGH SPEED INTEGRATED CIRCUITS

Battalion C2 INFOSYS platforms employ EPLRS VHSIC as their primary data communications link to company and platoon platforms. It serves as a position location, navigation, identification, and communications system. Its primary components are the NCS and the radio sets. The NCS is the centralized control element used for system initialization, monitoring, and control. The radio sets are the radio receiver-transmitters provided to EPLRS VHSIC users. The battalion uses EPLRS VHSIC to provide WAN connectivity down to platoon and up to SBCT. The antenna used with the system is an omni-directional dipole. The planning range is three to ten kilometers between radios, depending on power output settings and terrain.

## B-15. RESPONSIBILITIES

Key communications personnel include: the battalion signal officer, unit signal support systems specialists, systems integration vehicle (SIV) operators, CP LAN manager, and ABCS system administrator:

a. **Battalion S6 (Signal Officer).** The battalion S6 manages the operations of communications systems received from the SBCT communications systems to support

their organization as well as the battalion's own communications systems. He has OPCON of attached signal personnel. The battalion S6--

- Participates in the planning and operations process of the battalion.
- Coordinates closely with the brigade S6 on planning and operating the TI as it relates to the battalion.
- Understands the capabilities and operation of all communication and automation equipment in the battalion.
- Advises the battalion staff on communications matters.
- Receives and validates EPLRS VHSIC requirements and provides these to the SBCT signal officer.
- Maintains the status of communications systems operating in the battalion.
- Coordinates employment and operation of the SIV assigned for network management.
- Keeps the SIV team apprised of battalion mission operations.
- Exercises supervisory responsibility for training and assigning the signal support system specialists in the battalion.
- Develops a concise signal annex to the battalion OPLAN or OPORD.
- Tracks COMSEC distribution within the battalion.

b. **Unit Signal Support Systems Specialists.** The unit signal support system specialists assigned to all units accomplish system maintenance and TI system initialization and reinitialization functions, as required.

c. **SIV Operators.** The two information systems integrator-analysts and one single-channel radio operator are responsible for SIV operations. The information systems operator-analysts execute the network plan, initialize the network, and operate the network. The radio operator-maintainer establishes the site for the SIV and installs, operates, and maintains the radio systems (SINCGARS SIP, EPLRS VHSIC, and NTDR) in the SIV.

d. **CP LAN Manager.** The battalion S3 is responsible for ensuring the CP LAN, which supports all ABCS component systems, is properly integrated to provide synchronization of information needed for successful battle command execution.

e. **ABCS System Administrator.** The system administrator is responsible for the installation, operation, and maintenance of an ABCS computer host. Each ABCS component system (ASAS, AFATDS, CSSCS, FAADC3I, and MCS) assigns a "senior operator" to serve as system administrator.

## Section V. DIGITAL COMMAND AND CONTROL SYSTEMS AND ARCHITECTURE

This section provides basic information on the digital command and control systems and architecture that support SBCT C2 operations.

### B-16. ARMY BATTLE COMMAND SYSTEM COMPONENTS

The ABCS consists of the five Army tactical command and control system (ABCS) subcomponents, the FBCB2 system, and the tactical internet. The ABCS components have traditionally been “stovepipe” systems in their development, with very limited interface capability to other digital systems. The ABCS components are the primary digital communication systems between command posts. FBCB2 is the primary digital

system for communication and transmission of data at battalion level and below and for some SBCT units (for example, the SBCT calvary squadron (RSTA) reconnaissance troop).

a. **Maneuver Control System.** The MCS is the hub of the ABCS component in each command post. It is the primary system for the creation and dissemination of orders, graphics, and operations-related reports. Embedded battle command (EBC) is a software subcomponent of MCS-Light. It is a derivative of FBCB2 software and allows MCS-Light to exchange reports and graphics with FBCB2 systems.

(1) At battalion level, MCS-Light performs these primary functions:

- Receives orders and graphics from higher and adjacent units.
- Creates and disseminates orders and graphics to subordinate, higher, and adjacent units. Near-term ability to interface graphics and orders to FBCB2 and platform EBC is limited.
- Extracts information from other systems to display a picture of the battlefield that may include friendly and enemy positional information, terrain, friendly graphics, artillery range fans, ADA umbrellas, obstacles and contaminated areas, C2 INFOSYS nodes, and supply nodes.
- Sends and receives reports.

(2) Future system capabilities should allow for MCS to support course of action analysis and war gaming as well as digital rehearsals.

(3) Two MCS-Light systems are located in the CP. One is used primarily for generation and transmission of orders and messages; the other is normally set to display the enemy and friendly COP and friendly graphics to allow the staff to track the battle.

(4) There are limitations in the automatic generation of friendly locations. Obviously, forces that are not equipped with FBCB2 or are not transmitting to the TI will not automatically appear in the COP picture and must be manually input into MCS by the operations section. Operators may also manually input friendly icons via FBCB2.

b. **All-Source Analysis System.** ASAS supports intelligence operations, providing linkage to strategic and tactical intelligence sensors and sources. ASAS primary functions include--

- Data access, databasing, and correlation capabilities.
- Creation and dissemination of intelligence reports, templates, and annexes.
- Receipt of intelligence reports from a variety of sources (including FBCB2 and other digital systems and display and management of the enemy COP).
- Collection management.
- Support of targeting functions.

The battalion has a single ASAS-Light system located in the S2 platform at the CP. The S2 uses ASAS-Light to receive intelligence reports from all sources and to create and manage the correlated COP, which the other ABCS components in the CP can access. Additionally, the S2 routinely sends the ASAS-Light picture he generates down to subordinate units via FBCB2. He also sends it to the SBCT, where it is integrated into the brigade-level enemy picture by the SBCT S2 section.

c. **Advanced Field Artillery Tactical Data System.** AFATDS provides automated capabilities to control fire support operations. Located in the FSE platform at the CP and in the supporting artillery battalion CP, the system provides the ability to--

- Create and disseminate fire support orders, graphics, and control measures.
- Receive and process calls for fire from other digital systems and target acquisition radars.
- Manage mission allocation.
- Monitor firing unit status and locations.
- Transmit and receive reports and free-text messages.
- Display the enemy and friendly COP from MCS-Light and ASAS-Light.
- In conjunction with ASAS, provide integrated fires and IEW management.

d. **Forward Area Air Defense Command, Control, and Intelligence System.** FAADC3I is the collection of computer and communication systems used to control air defense elements and create the air battle picture. It serves to integrate sensors (airborne warning and control system [AWACS], Patriot, Sentinel) with SHORAD weapons systems. The long-range air picture is created from information received from AWACS aircraft transmitted on joint tactical information distribution system (JTIDS) radios, and from the division's Sentinel air acquisition radars transmitted through the ground-based sensor. Air track data is sent via EPLRS and SINCGARS radios to individual firing elements (Linebacker, Avenger, and Stinger teams). The total FAADC3I system provides real-time enemy air engagement operations, airspace data, and air threat early warning. The air defense element in the battalion CP is equipped with an AM radio to monitor the division air defense early warning net and a handheld terminal unit that provides a digital link to the FAADC3I network. FM voice remains the primary means for transmitting initial air threat warnings to the battalion as a whole for the near-term. FBCB2 is the secondary method and is capable of displaying both visual and audible alerts to crews.

e. **Combat Service Support Control System.** CSSCS provides logistics status and information in support of CSS planning and operations. The system receives subordinate unit logistical reports, and it transmits reports and requirements to echelons-above-brigade support elements. CSSCS is not available in combat units. Within the SBCT the BSB is fielded with the CSSCS system.

f. **FBCB2 and Embedded Battle Command.** FBCB2 and its derivative, EBC, is the foundation system for ABCS. Mounted on most of the vehicles in the battalion, each system is linked to a precision light weight GBS receiver (PLGR) and a SINCGARS or EPLRS radio. Each FBCB2 generates and transmits its own position location. Collectively, the FBCB2 systems generate the friendly picture. Operators use FBCB2 to generate enemy spot reports, which comprise most of the enemy picture at the tactical level. The system's capabilities for messaging, reporting, and producing orders and graphics support battle command for each battlefield functional area.

(1) ***Embedded Battle Command.*** Some platforms have the embedded battle command system. These systems have segments of FBCB2 software loaded into computers that are built into the vehicle (not added on, as FBCB2 is). EBC is a separate software package that allows platforms to share information with FBCB2-equipped platforms and ABCS components. The vehicle computer is designed to support a variety of vehicle operations in addition to command and control. On the vehicles noted above, the computers also perform fire control functions. (In this manual, the general term FBCB2 includes the platform EBC for the sake of simplicity.)

(2) ***Internet Controller.*** FBCB2 receives data across the tactical internet via the internet controller (INC). The INC is a tactical router built into the SINCGARS radio

system. The EPLRS data radio and the SINCGARS radio transmit and receive digital information between vehicles.

## B-17. DIGITAL COMMAND AND CONTROL TECHNIQUES

This paragraph discusses considerations and techniques for digital command and control procedures and for integrating analog and digital units. The potential of these systems to contribute to battlefield lethality, tempo, and ability to dominate is enormous. Digital command and control systems bring a dramatic increase in the level of informational dominance units may achieve. They can significantly speed the process of creating and disseminating orders; allow for extensive databasing of information; and increase the speed and fidelity of coordination and synchronization of battlefield activities. At the same time, achieving the potential of these systems requires extensive training, a high level of technical proficiency by both operators and supervisors, and the disciplined use of detailed SOPs. Communications planning and execution to support the digital systems is significantly more demanding and arduous than is required for units primarily relying on FM and MSE communications.

a. **FM or Digital.** Whether to use FM or digital means for communication is a function of the situation and SOPs. Even though both systems are critical for effective C2 at the battalion level, FM remains the primary method for control at battalion level and below during operations, with additional support from the COP display provided by FBCB2. Some general considerations can help guide the understanding of when to use which mechanism at what time.

(1) FM is the primary method of communications between battalion and SBCT and when elements are in contact throughout the battalion. Prior to and following an engagement, the staff and commanders use digital systems for disseminating orders and graphics and conducting routine reporting. During operations, however, the battalion staff uses a combination of systems to report and coordinate with higher and adjacent units.

(2) Staffs at higher echelons, particularly division and brigade levels, must remain sensitive to the difficulty and danger of using digital systems when moving or in contact. They should not expect digital reports under those conditions. Other general guidelines include the following:

- Initial contact at any echelon within the battalion should be reported on FM voice; digital enemy spot reports should follow as soon as possible to generate the enemy COP
- Elements moving about the battlefield (not in command posts) use FM voice unless they can stop and generate a digital message or report.
- Emergency logistical requests, especially casualty evacuation requests, should be initiated on FM voice with a follow-up digital report, if possible.
- Combat elements moving or in contact should transmit enemy spot reports on FM voice; their higher headquarters should convert FM reports into digital spot reports to generate the COP. At team level, the XO, the first sergeant, or the troop CP converts the reports.
- Calls for fire on targets of opportunity should be sent on FM voice; team FISTS submit digitally to AFATDS.
- Planned calls for fire from FISTS in the initial part of an engagement should be sent digitally.

- Routine logistical reports and requests should be sent digitally.
- Routine reports from subordinates to battalion prior to and following combat should be sent digitally.
- Orders, plans, and graphics should be sent digitally, accompanied by FM voice call to alert recipients that they have critical information being sent to them. Additionally, the transmitting element should request a verbal acknowledgement of both receipt and understanding of the transmitted information by an appropriate soldier (usually not the computer operator).
- Obstacle and NBC-1 reports should be sent initially by voice followed by digital reports to generate a geo-referenced message portraying the obstacle or contaminated area across the network.

b. **Friendly COP.** The creation of friendly COP is extensively automated, requiring minimal manipulation by command posts or platform operators. Each platform creates and transmits its own position location and receives the friendly locations, displayed as icons, of all the friendly elements in that platform's wide area network. This does not necessarily mean that all friendly units in the general vicinity of that platform are displayed, however, since some elements may not be in that platform's network. For example, a combat vehicle in a battalion will probably not have information on a corps artillery unit operating nearby since the two are in different networks. The COP generated from individual FBCB2 platforms is transmitted to command posts through the TOC server to MCS-Light. The other ABCS components can access the friendly COP through MCS.

(1) ***Limitations.*** Commanders must recognize limitations in the creation of the friendly COP that results from vehicles or units that are not equipped with FBCB2 or EBC. The following are two aspects to consider.

(a) Not all units will be equipped for years to come, particularly in the reserve component. With over 60 percent of the corps logistical units and supporting artillery in the Army Reserve or National Guard, it is inevitable that analog units will enter the SBCT and battalion area of operations.

(b) Most dismounted soldiers will not be equipped with a digital device that transmits information. A system (Land Warrior) for dismounted soldiers is under development.

(2) ***Solutions.*** The following are ways to overcome these limitations:

(a) A digitally equipped element tracks the location of specified dismounts and manually generates and maintains an associated friendly icon. As an example, the mechanized team XO can generate an icon for dismounted squads.

(b) The battalion main CP tracks analog units operating with the battalion and generates associated friendly icons.

(c) A digitally equipped platform acts as a liaison or escort for analog units moving or operating in the battalion area. Battalion and higher elements must be informed of the association of the LNO icon with the analog unit.

(d) Do not use friendly positional information to clear fires since not all elements will be visible! Friendly positional information can be used to deny fires and can aid in the clearance process, but it cannot be the sole source for clearance of fires. This holds true for all ABCS systems.

c. **Enemy COP.** The hardest and most critical aspect of creating the COP is creating the picture of the enemy. The enemy COP at SBCT and battalion levels is the result of

multiple inputs--FM spot reports, UAV and JSTAR reports, reports from FBCB2- and EBC-equipped platforms in subordinate units, electronic or signal intelligence feeds, and inputs from the S2 section. Enemy information generation is a complex process that is partially automated but requires a great deal of work and attention to detail to get right.

(1) Generation of the enemy COP occurs at all echelons. At battalion level and below, the primary mechanism for generating information is FBCB2. When an observer acquires an enemy element, he creates and transmits a spot report, which automatically generates an enemy icon that appears network-wide. Only those in the address group to whom the report was sent receive the text of the report, but all platforms in the network can see the icon. As the enemy moves or its strength changes, the observer must update this icon. If the observer must move, he ideally passes responsibility for the icon to another observer. If multiple observers see the same enemy element and create multiple reports, the battalion or SBCT S2 (or some other element that has the capability) must eliminate the redundant icons.

(2) FBCB2 spot reports must include the higher headquarters S2 in the address group for the data to be routed through the CP server into ASAS-Light to feed the larger intelligence picture. FM reports received at a command post can be manually input into the ASAS-Light database by the S2 section. FBCB2 and FM voice reports are the primary source of enemy information for fighting the close and rear battles.

(3) In the SBCT, the S2 section and the supporting analysis control team receive ASAS intelligence feeds from higher and adjacent units along with feeds from JSTARS, UAVs, and the common ground station. They enter enemy information from these sources into the ASAS database and send this information via FBCB2 to the battalion S2s. These feeds, along with FM voice and FBCB2 reports, are the primary sources of the enemy COP for executing the SBCT deep fight and providing battalions a picture of what is coming into their areas.

(4) Fusion of all the intelligence feeds is normally done at brigade and division levels. The SBCT S2 routinely (every 30 minutes to every hour) sends the updated enemy picture to subordinate units down to platform level. Since the fused ASAS database is focused on the deeper areas of the battlefield and its timeliness may vary, subordinate battalion elements and the reconnaissance units normally use only the FBCB2-generated COP. Companies should stay focused entirely on the FBCB2-generated COP. Battalion leaders and staffs refer occasionally to the FBCB2-generated intelligence picture to keep track of enemy forces that will be encountered in the near future but that are not yet part of the battalion close fight.

(5) As systems develop further in the future, the generation of the enemy COP will be increasingly automated. However, the success of the intelligence effort depends primarily on the ability of staffs to analyze enemy activities effectively, to develop and continuously refine effective IPB, and to create and execute effective collection management plans. Automation and displays contribute enormously to the ability to disseminate information and display it in a manner that aids comprehension, but information generation must be rapid for it to be useful. Information must also be accompanied by analysis: pictures alone cannot convey all that is required nor will they be interpreted the same by all viewers. S2s must be particularly careful about spending too much time operating an ASAS terminal while neglecting the analysis of activities for the SBCT and subordinate commanders and staffs.

(6) The enemy COP is usually incomplete and less current than friendly COP. The timeliness and accuracy of the enemy picture must always be scrutinized. Use the picture to focus observers and orient the fire support process but do not use it as the sole source for generating indirect fire support target location data--it will usually not be timely enough.

d. **Graphics and Orders.** All ABCS components effectively support the creation and transmission of doctrinal field orders. The SBCT staff sections normally develop their portions of orders and send them to the S3 (plans) where they are merged into a single document and transmitted to subordinate, higher, and adjacent units. In creating orders, remember that the tactical internet does not possess high transmission rates like civilian E-mail. Orders and graphics must be concise to reduce transmission times. Orders transmitted directly to FBCB2-equipped systems (as all subordinate leaders in the battalion have) must meet the size constraints of the order formats in FBCB2. Graphics and overlays should be constructed with the same considerations for clarity and size.

(1) ***Graphics.*** When creating graphics, remember that the primary users will be FBCB2-equipped. The graphics must interface and transmit. The interface and commonality of graphics will continue to evolve technologically and will require further software corrections. The following guidelines apply.

(a) Create control measures relative to readily identifiable terrain, particularly if analog units are part of the task organization.

(b) Boundaries are important, especially when multiple units must operate in near proximity or when it becomes necessary to coordinate fires or movement of other units.

(c) Intent graphics that lack the specificity of detailed control measures are an excellent tool for use with warning and fragmentary orders and when doing parallel planning. Follow them with appropriately detailed graphics as required.

(d) Use standardized colors to differentiate units. This should be articulated in the SBCT SOP and established at brigade level. For example, SBCT graphics may be in black, armor battalion A in purple, armor battalion B in magenta, and mechanized infantry battalion in brown. This adds considerable clarity for the viewer. Subordinate team colors should be specified.

(e) Use traditional doctrinal colors for other graphics (green for obstacles, yellow for contaminated areas, and so on). Develop an SOP that uses the color capabilities of the systems to identify templated actions or activities (such as proposed obstacles and templated enemy actions or positions) and executed or actual activities (emplaced obstacles and observed enemy).

(2) ***Overlays.*** When creating overlays, use multiple smaller overlays instead of a single large overlay. This speeds transmission times. System operators can open the overlays they need, displaying them simultaneously. This technique also helps operators in reducing screen clutter.

(a) The S3 should create the initial graphic control measures (boundaries, objectives, and phase lines) on a single overlay and distribute it to the staff. This overlay should be labeled as the operations overlay with the appropriate order number.

(b) Staff elements should construct their appropriate graphic overlays using the operations overlay as a background but without duplicating the operations overlay. This avoids unnecessary duplication and increase in file size and maintains standardization

and accuracy. Each staff section labels its overlay appropriately with the type of overlay and order number (for example, fire support, OPORD X-XX).

(c) Before overlays are transmitted to subordinate, higher, and adjacent units, the senior battle captain or the XO checks them for accuracy and labeling. Hard copy (traditional acetate) overlays are required for the CPs and any analog units.

(d) Transmit graphics for on-order missions or branch options to the plan before the operation as time permits. If time is short, transmit them with warning orders.

(3) ***Acetate Maps.*** The advent of digitization does not mean that acetate and maps have no use and will disappear, at least not in the near future. Maps still remain the best tools when maneuvering and fighting on the battlefield or for controlling and tracking operations over a large area. The combination of a map with digital information and terrain database is ideal; both are required and extensively used.

## B-18. SOP CONSIDERATIONS

This paragraph contains information regarding digital operations that is relevant for the SBCT and battalion tactical SOPs. Most of the digital operating procedures must be established at brigade level to achieve standardization and effective C2 INFOSYS. As units have different mission requirements and technical changes occur, they should experiment with these guidelines.

a. **Filter Settings.** To create a common picture, all FBCB2 and EBC platforms must have the same information filter settings. This is particularly important for the enemy COP so that as icons go stale, they purge at the same time on all platforms. Standard filter settings based upon the nature of the enemy's operation should be established in unit SOPs and be the same throughout the SBCT. For enemy offensive operations, the filter setting times should be short; for enemy defensive operations, the setting times should be longer, reflecting the more static nature of the enemy picture.

(1) Standard filter setting may need adjusting based on the terrain and the mission. In compartmentalized, difficult terrain, longer settings are more appropriate, maybe 10 minutes for the attack. In wide-open, fast-paced operations in the desert, however, shorter settings in the 5-minute range may be more appropriate. Also, as the enemy transitions from offensive to defensive operations, the decision should be made at brigade level to change to the appropriate standard filter setting.

(2) The standardization of friendly situational filter settings is of equal importance in maintaining a common COP throughout the force. FBCB2 provides three methods for updating individual vehicle locations: time, distance, and manually. When the system is fully operational, it automatically updates friendly icons using time, distance traveled, or both, based on the platform's friendly situational filter settings. These settings should be standardized across the force based on both the mission and the function of the platform or vehicle, with shorter refresh rates for combat vehicles and vehicles that frequently move versus longer refresh rates for fairly static vehicles such as CPs. Tailoring the frequency of these automatic updates also reduces the load on the tactical internet, freeing more capacity for other types of traffic.

(3) The friendly icon refresh rate may also change as the battle is executed. This is especially true in the transition from the offense to the defense or vice versa. The standardization of friendly situational filter settings is probably most effectively done at the brigade level using the SBCT tactical SOP. There are no set rules for what these

settings should be; they must be established based on the unit's experience in using FBCB2 and the capacity of the tactical internet. The capability to update a vehicle's position manually should be used only when a platform's system is not fully functional and has lost the ability to maintain its position within the system.

b. **Reporting.** It may not be advantageous to have all platforms on the battlefield send spot reports digitally. This can lead to multiple reports of the same enemy element and contribute to an already confused and indecipherable intelligence picture. Defining who within the SBCT can initiate digital spot reports can help eliminate this problem. One technique is to limit the creation of enemy icons via digital spot reports to reconnaissance elements and the company leadership (commander, XO, or 1SG). Others report on FM to their higher headquarters, which creates and manages the icon. Defining who within the SBCT can initiate digital spot reports also helps those who execute the direct fire fight by moving the digital reporting responsibility to someone who is somewhat removed from the fight. At company level, the XO, 1SG, or CP personnel become the primary digital reporters. These assignments cannot be completely restrictive. Unit SOPs and command guidance must allow for and encourage soldiers who observe the enemy and know they are the sole observer (because there is no corresponding enemy icon displayed in the situational COP) to create a digital spot report. SBCT and battalion SOPs should define the schedule for report submissions, the message group for the reports, and the medium (digital system or verbal) to be used.

c. **Updates.** Establish a routine schedule of system updates. For example, the S2 section should continuously update the ASAS database and should transmit the latest COP to the network every 30 minutes during operations if the battalion commander, S3, or reconnaissance elements need it. Also, staff sections should print critical displays on an established schedule. These printed snapshots of the COP can be used for continuity of battle tracking in the event of system failures and can contribute to AARs and unit historical records.

d. **Orders and Overlays.** SOPs should define the technical process for creating, collating, and transmitting orders and overlays, both analog and digital.

e. **Filing System Naming Convention.** For interoperability and clarity, SBCT SOPs should define the naming convention and filing system for all reports, orders, and message traffic. This significantly reduces time and frustration associated with lost files or changes in system operators.

f. **Color Standards.** As discussed previously, SOPs should define colors used in graphics down to team level.

g. **Databases.** C2 INFOSYS will inevitably migrate to a web-based capability, allowing information to be entered into a database and then accessed by users as needed or when they are able to retrieve it. For example, the S2 may transmit an intelligence summary to all subordinates and inevitably some will lose the file or not receive it. The S2 can simultaneously post that same summary to his "homepage" so users can access it as required. If this technique is used, there are a few key things to consider:

- Posting a document to a homepage does not constitute communications. The right people must be alerted that the document is there and available.
- Keep documents concise and simple. Elaborate Powerpoint slide briefings will take days to transmit, collapsing the tactical internet. Gaudy graphics and templates are a no-go.

- The amount of information entered in a database and personnel who have access must be carefully controlled, both to maintain security and to keep from overloading the tactical internet.

## B-19. INTEGRATING DIGITAL AND ANALOG UNITS

It will be several years before the majority of the Army is digitally equipped. Even then, the SBCT will operate with elements without digital equipment, especially in joint or coalition environments. National Guard and Army Reserve units, light forces, supporting corps artillery, and corps-level logistical units are the most likely types of analog units with whom the SBCT and its battalions will operate. Procedures for integrating digital and analog units are essential for the SBCT.

a. FM and MSE are the primary communications mediums with the analog unit.

b. Hard copy orders and graphics are required.

c. Graphical control measures require a level of detail necessary to support operations of a unit without situational information. This generally requires that more control measures be tied to identifiable terrain.

d. LNO teams are critical.

e. The battalion staff must recognize that integrating an analog unit into a digital unit requires retention of most of the analog control techniques. In essence, two control systems must be in operation, with particular attention paid to keeping the analog unit apprised of all pertinent information that flows digitally.